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United States Department of Agriculture
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INTRODUCTION

The cost of feed is the largest item of expense in raising rabbits. In planning for economy, therefore, breeders should give careful consideration to home-grown crops, dietary supplements that may have to be purchased, and commercially prepared mixtures and pellets, and select rations that are suitable to the needs of the animals. Each herd of rabbits presents an individual feeding problem. The kind of ration to be used will be determined largely by the maintenance of the rabbits as a hobby; for show purposes; for the family meat supply; for producing meat, pelts, wool, and laboratory animals commercially; for supplementing the family income; or for furnishing full time employment. The amount of time the breeder has available for preparing and feeding the ration also is an important factor in selection of the kind to use.

TYPES OF FEEDS SUITABLE FOR RABBITS

Rabbits consume a variety of feeds, and there are a large number of crops in the different sections of the United States that are suitable for making up satisfactory rations. Feeds have been classified in the following groups to aid the breeder in selecting those for use in making up rations for his herd.

1/ Formerly Wildlife Leaflet 266 issued in April 1945 by the Fish and Wildlife Service, Department of the Interior.

For all practical purposes, any feed in one group may replace another feed in the same group without materially changing the nutritive value of the ration. Only feeds of good quality should be used.

Group 1.—Carbohydrate Feeds

Oats, wheat, barley, the grain sorghums (milo, feterita, hegari, kafir, and sagrain), buckwheat, and rye may be used as whole grain or milled. There will be considerable waste of the harder types of corn unless they are fed in the meal or cracked form.

Milled products--wheat bran, wheat middlings, wheat shorts, and red dog flour--and by-products from manufacturing foods from other grains for human use may be included in mash mixtures and pelleted rations.

Group 2.—Vegetable Protein Supplements

The plant protein supplements--soybean, peanut, or linseed--in the meal, pea-size cake, or pelleted form, are desirable for increasing the protein content of the ration.

Group 3.—Table Scraps

Fresh table scraps (other than greasy or sour foods) can be fed as a supplement to the grain-protein-hay or pelleted ration. Material can thus be utilized that otherwise would be wasted and at the same time the cost of maintaining the animals will be reduced.

Group 4.—Legume Hays

Legume hays--alfalfa, clover, sweet clover, lespedeza, cowpea, vetch, kudzu, soybean, and peanut--when leafy, fine-stemmed, and green-colored, make excellent dry roughage.

Group 5.—Carbonaceous Hays

The carbonaceous hays--timothy, Johnson grass, prairie grass, Sudan, Dallis, Rhodes grass, Bermuda, and carpet grass--while less palatable, are valuable for feeding in areas where legumes cannot be obtained.

These grass hays ordinarily contain only about half the protein that is present in legume hays; consequently, when they are fed, more protein supplements (group 2) must be included in the ration. If these grass hays are cut before the plants are in bloom and when the stems are fine, with a high proportion of leaf, they will be much more suitable for feeding rabbits, principally because of the higher protein content, but even so they do not contain as much as the legume hays.

Group 6.—Green Feed and Root Crops

Rapidly growing plants—grasses, palatable weeds, cereal grains, and leafy garden vegetables—are high in proteins, minerals, and vitamins, and are excellent feeds. They should be used when they are available at reasonable cost and when their use in the ration will fit into the management program. Root crops—carrots, sweet potatoes, turnips, mangels, beets, and Jerusalem artichokes—are desirable for feeding throughout the year, but they are especially useful during winter when green feeds are not available.

Green feeds and root crops are of greatest value when fed fresh as a supplement to a grain-protein-hay or pelleted ration; they should be given once a day in the quantity that will be consumed in 4 or 5 minutes. Because of their high water content such feeds should not take the place of grain feeding if choice carcasses are desired.

Group 7.—Salt

White salt is necessary in the ration. In areas where the soil is depleted in certain mineral elements and therefore mineralized salts are used for making up this deficiency in feeding other farm animals, they may also be used in rabbit rations.

Group 8.—Water

Fresh, clean water should be available to all the rabbits in the herd. During periods of freezing temperatures, water should be given once a day.

PREPARING AND STORING FEEDS

Extensive research has shown that whole grains are satisfactory for feeding rabbits and that the milled products—rolled, cracked, or ground—if stored for any length of time, especially during the warm season, lose some of their food value and are less palatable.

It is not necessary to cut or otherwise prepare hays if they are not coarse and if they are of the best quality. Cutting the coarse hays into 3- or 4-inch lengths makes them more convenient to feed and reduces waste.

Two types of pelleted rations are on the market—the all-grain pellet to be fed with hay and the complete pellet ("green pellet") which usually contains all the necessary food elements for a balanced ration. Pelleted feeds are readily available in some regions and in many cases are the only feeds readily obtainable in urban areas. They require little storage space and are easy to feed, but are more expensive than rations composed of feeds in their natural forms.

In many instances considerable money can be saved by providing storage space and using home-grown feed or buying crops from the producer when they are being harvested. The buying of feed a bag or a bale at a time reduces the margin of profit and may make the difference between success and failure.

FEED REQUIREMENTS OF RABBITS

Rations for dry does, herd bucks, and developing young should provide the following dietary elements:

Protein.....	12 to 15 percent
Fat.....	2 to 3.5percent
Fiber.....	20 to 27 percent
Nitrogen-free extract.....	43 to 47 percent
Ash or mineral.....	5 to 6.5percent

Rations for pregnant does and does with litters should contain more protein and should include:

Protein.....	16 to 20 percent
Fat.....	3 to 5.5percent
Fiber.....	14 to 20 percent
Nitrogen-free extract.....	44 to 50 percent
Ash or mineral.....	4.5 6.5percent

The protein content of the rations is important in the development of the young and in the quantity of food required for a certain gain in live weight. Adding the proper quantity of protein supplement to a ration composed of grains and hay will increase the rate of growth of young rabbits 13 to 20 percent and effect a saving of 20 to 25 percent in the quantity of feed required for a unit of gain.

The proportion of protein that is being recommended for pregnant does and does with litters is greater than that in previous rations, and since proteins are difficult to obtain in some areas at present (1945), it may be some time before it will be possible to include the most satisfactory proportion in the rations.

Protein is the most expensive part of the feed, but the proportions recommended are those that have proved most economical. The upper limits suggested give better results than the lowest, and there is no danger in feeding higher levels of protein than recommended, provided the ration is adequate in all other ingredients. Consequently, in small herds of rabbits, or where management practices make it inadvisable to feed two rations, that for pregnant does and for does with litters can be fed to the entire herd.

A GUIDE IN PURCHASING COMMERCIAL FEEDS

Nearly all States have laws regulating the sale of commercial feeds. In most of them the law requires that a feed tag giving the guaranteed analysis and a list of the ingredients be attached to the sack. Usually the percentages of protein and fat must be no less than those stated and the percentage of fiber must not be greater than is guaranteed. In some States the nitrogen-free extract is not listed on the tag.

Breeders can compare the analysis of the feed as shown on the feed tag with the feed requirements given in this leaflet and select the feed that comes nearest to meeting them. In the case of a complete pellet, if the percentage of protein is below the requirements, pelleted or pea-size soybean, peanut, or linseed meal may be added to obtain the necessary proportion. For example: If the complete pellet contains protein in the proportion of 13 to 15 percent, and the ration is to be fed to pregnant does or does with litter, it would be necessary to add 1 part, by weight, of 40 to 44 percent protein--soybean or peanut pea-size cake or pellets--to 4 parts of the pelleted ration to bring the quantity of protein up to the 19 or 20 percent level. If linseed (30 percent protein) is used, 1-1/2 parts of linseed--pea-size cake or pellets--would be mixed with 4 parts of the complete pellets.

Only fresh soybean, peanut, or linseed cake or pellets, as indicated by a distinct nutty aroma and taste, should be fed.

MAKING UP RATIONS

Breeders can make up home-mixed rations from carbohydrate feeds, plant protein supplements, and hay. A typical ration for dry does, herd bucks, and developing does and bucks would consist of two parts of whole oats or barley and two parts of whole wheat (group 1), and one part of soybean, peanut, or linseed in the pea-size cake or pelleted form (group 2), this mixture to be fed with good quality, legume hay (group 4).

A ration for pregnant does and does with litters could be made up of two parts of whole oats or barley and two parts of whole wheat (group 1), and two parts of soybean, peanut, or linseed in the pea-size cake or pelleted form (group 2), this mixture also to be fed with good quality, legume hay (group 4).

If it is desirable to feed these rations in pelleted form, the grain and protein supplement may be made into an all-grain pellet to be fed with hay, or the grain and protein supplement, and the hay, can be made into a complete pellet. The usual proportions are 60 to 50 percent grain and protein mixture and 40 to 50 percent hay. Detailed information on making up rations from the available feeds from all sections of the United States is contained in a bulletin, "Rabbit Production", copies of which can be obtained from the U. S. Rabbit Experiment Station, Fontana, California, or from the U. S. Department of Agriculture, Washington 25, D. C.

Salt may be incorporated in the protein supplement meal when this is pelleted to be fed with whole grains, or in the mixture to be made into an all-grain pellet or a complete pellet, in the proportion of 1/2 pound to a hundred pounds of the whole ration.

THE RATION AND THE FUR-EATING HABIT

Rabbits that eat their own fur or the fur of other rabbits, or the bedding material and the fur in the nest box, in most cases do so because the ration has been inadequate in quality or quantity.

The experienced breeder notes carefully the condition of each animal in the herd and regulates the quantity of feed to meet its individual requirement. Keeping a good quality hay before the rabbit at all times and feeding fresh, sound, green feed or root crops as a supplement to the grain or pelleted ration will also help to correct the abnormal appetite. Sometimes this is due to the protein content of the ration being too low, and therefore adding more soybean, peanut, or linseed to the ration will correct the deficiency.

